UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,942	11/20/2003	Angqin Bai	TUC920030131US1	9009

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Kunzler & McKenzie	KEEFER, MICHAEL E	
8 EAST BROADWAY		
SUITE 600	ART UNIT	PAPER NUMBER
SALT LAKE CITY, UT 84111	2154	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/717,942	BAI ET AL.
	Examiner	Art Unit	
	Michael E. Keefer	2154	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*20 November 2003*</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>*20 November 2003*</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>*2/9/2004*</u>.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

1.   This Office Action is responsive to the Application filed 11/20/2003.

Drawings

2.   The drawings are objected to because in Figure 5, the number "400" should be
changed to --500-- to agree with the specification. Corrected drawing sheets in
compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid
abandonment of the application. Any amended replacement drawing sheet should
include all of the figures appearing on the immediate prior version of the sheet, even if
only one figure is being amended. The figure or figure number of an amended drawing
should not be labeled as "amended." If a drawing figure is to be canceled, the
appropriate figure must be removed from the replacement sheet, and where necessary,
the remaining figures must be renumbered and appropriate changes made to the brief
description of the several views of the drawings for consistency. Additional replacement
sheets may be necessary to show the renumbering of the remaining figures. Each
drawing sheet submitted after the filing date of an application must be labeled in the top
margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If
the changes are not accepted by the examiner, the applicant will be notified and
informed of any required corrective action in the next Office action. The objection to the
drawings will not be held in abeyance.

Specification

3.   The disclosure is objected to because of the following informalities:

In paragraph 34, it is suggested that in line 4 the word "controller." be deleted

and replaced with the word --controller 204--.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed

to non-statutory subject matter.

Regarding **claim 1**, which is directed to a prioritization apparatus. The

"modules," in accordance with Applicant's specification, may be software

instructions. This subject matter is not limited to that which falls within a statutory

category of invention because it is not limited to a process, machine,

manufacture, or a composition of matter. Instead, it includes software per se.

Functional descriptive material does not fall within a statutory category since it is

clearly not a series of steps or acts to constitute a process, not a mechanical

device or combination of mechanical devices to constitute a machine, not a

tangible physical article or object which is some form of matter to be a product

and constitute a manufacture, and not a composition of two or more substances

to constitute a composition of matter.

Claims 2-6, which depend from claim 1, do not remedy the deficiencies of

claim 1 and thus are rejected for the same.

Regarding **claim 7**, which is directed to a device controller. The "modules," in accordance with Applicant's specification, may be software instructions. This subject matter is not limited to that which falls within a statutory category of invention because it is not limited to a process, machine, manufacture, or a composition of matter. Instead, it includes software per se. Functional descriptive material does not fall within a statutory category since it is clearly not a series of steps or acts to constitute a process, not a mechanical device or combination of mechanical devices to constitute a machine, not a tangible physical article or object which is some form of matter to be a product and constitute a manufacture, and not a composition of two or more substances to constitute a composition of matter.

Claims 8-14, which depend from claim 7, do not remedy the deficiencies of claim 7 and thus are rejected for the same.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6.   Claims 7-10, and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's Admitted Prior Art, hereafter AAPA.

Regarding **claim 7**, AAPA discloses:

A device controller apparatus, comprising:

a status module configured to track system resources of a device ([0006]

the counter is a status module); and

a task processing module configured to receive tasks with upgraded

prioritization levels. ([0006] each path must inherently have a task processing

module to receive upgraded tasks, as in [0007] it is disclosed that they are

forwarded to the beginning of the queue.)

Regarding **claim 8 as applied to claim 7**, AAPA discloses:

wherein the task processing module is further configured to receive tasks

of different priorities according to a predefined prioritization scheme. ([0006]

discloses different priority levels for different tasks received by the paths)

Regarding **claim 9 as applied to claim 7**, AAPA discloses:

further comprising a queue of tasks to be processed. (A queue is

disclosed in [0007])

Regarding **claim 10 as applied to claim 7**, AAPA discloses:

wherein the task processing module is further configured to place tasks

with upgraded prioritization levels at the beginning of the queue for processing.

([0007] discloses this in lines 2-4)

Regarding **claim 13 as applied to claim 7**, AAPA discloses:

further comprising a computer readable storage device coupled to the

apparatus and configured to process read/write tasks received from the task

controllers. ([0003] discloses a SAN network)

Regarding **claim 14 as applied to claims 7 and 13**, AAPA discloses:

wherein the computer readable storage device is configured to process

input/output tasks from the plurality of task controllers. ([0006] discloses that the

tasks are completed by the recipient.)

7.   Claim 30 is rejected under 35 U.S.C. 102(b) as being anticipated by AAPA.

Regarding **claim 30**, AAPA discloses:

A prioritization apparatus for data in a communication channel, comprising:

means for defining a plurality of prioritization levels; (See the definition of this in

[0006])

means for upgrading the prioritization level of an unsuccessful task and

communicate the unsuccessful task to a different channel; ([0007] discloses upgrading

the priority of an unsuccessful task while forwarding it to a new channel)

means for selecting a communication channel, processing a task over the

selected communication channel, and updating a counter according to utilized system

resources; ([0006] discloses channels with counters and updating the counter, [0007]

discloses selecting the communication channel)

means for transmitting and receiving tasks over the plurality of communication

channels; and (transmitting and receiving means for the tasks are inherent otherwise

the prior art system would not be able to function)

means for distributing tasks across the plurality of communication channels

according to a load balancing scheme. ([0006] discloses "balancing tasks across

multiple paths")

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Applicant's Admitted Prior Art, hereafter AAPA in view of Ballew et al. (US 4577272),

hereafter Ballew.

Regarding **claim 1**, AAPA discloses:

A prioritization apparatus for data in a communication channel, comprising:

a prioritization module configured to define a plurality of prioritization

levels; ([0006] discloses a prioritization system with a plurality of levels)

a communication module configured to process tasks over a plurality of

communication channels; ([0006] discloses multiple paths that connect different

sites)

an upgrade module configured to upgrade the prioritization level of

unsuccessful tasks; and ([0007] discloses upgrading the priority of failed tasks by

placing them ahead of other tasks in other queues)

Regarding **claim 2 as applied to claim 1**, AAPA discloses:

wherein the task controller is further configured to communicate with a

status module, the status module configured to indicate system resource usage

of a target device operatively coupled to the channel. ([0006] the counter

disclosed is a status indicator)

Regarding **claim 3 as applied to claims 1-2**, AAPA discloses:

wherein the target device further comprises a computer readable storage

device. (A SAN system is a computer readable storage device, [0003])

Regarding **claim 4 as applied to claim 1**, AAPA discloses:

wherein the task controller further comprises a load module configured to

distribute tasks across the plurality of communication channels according to a

load balancing scheme. ([0006] discloses that the prioritization algorithm is a load

balancing mechanism)

Regarding **claim 5 as applied to claims 1 and 4**, AAPA discloses:

wherein the load balancing scheme dedicates a majority of system

resources to tasks with a high priority, and a minority of system resources to

tasks with a lower priority. ([0006] discloses a prioritization algorithm that does

this. (70%/20%/10%))

Regarding **claim 6 as applied to claim 1**, AAPA discloses:

wherein the task controller further comprises a plurality of counters for

each of the plurality of channels, the counters configured to track system

resource usage of the plurality of channels. ([0006] discloses a counter for each

path that tracks resource usage)

AAPA discloses all the limitations of claims 1-6 except for:

the task controller is configured to maintain system resources on a failed

target channel while resubmitting an unsuccessful task to a different channel.

The general concept of maintaining resources on a failed channel while

resubmitting the task is well known in the art as taught by Ballew. (Note that failed tasks

are still assigned to the failed processor while they are being reassigned to one that is

online. (See Figs. 2 and 7)

It would have been obvious to one of ordinary skill in the art at the time of the

invention to combine AAPA with the general concept of maintaining resources on a

failed channel while resubmitting the task as taught by Ballew in order to accurately

keep track of what tasks are pending on a failed channel or processor.

10.   **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA

as applied to claim 7 above, and further in view of Ballew.

AAPA discloses all the limitations of claim 11 except for:

the task processing module is configured to maintain system resources on

a failed target channel while resubmitting an unsuccessful task to a different

channel.

The general concept of maintaining resources on a failed channel while

resubmitting the task is well known in the art as taught by Ballew. (Note that failed tasks

are still assigned to the failed processor while they are being reassigned to one that is

online. (See Figs. 2 and 7)

It would have been obvious to one of ordinary skill in the art at the time of the

invention to combine AAPA with the general concept of maintaining resources on a

failed channel while resubmitting the task as taught by Ballew in order to accurately keep track of what tasks are pending on a failed channel or processor.

11.   **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA as applied to claim 7 above, and further in view of Ballew.

AAPA discloses all the limitations of claim 12 except for the task processing module releasing system resources after the failed task is successfully completed on a different channel.

The general concept of releasing system resources after a failed task is successfully completed is well known in the art as taught by Ballew. (Fig. 2 and Fig. 6 teach that system resources (memory) are released when a task is completed after being reassigned by the processes in Fig. 2 and 7.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine AAPA and the general concept of releasing system resources after a failed task is successfully completed as taught by Ballew in order to ensure efficient use of system resources.

12.   Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Ballew.

Regarding **claim 15**, AAPA discloses:

A system for task prioritization, the system comprising:

a data communications network comprising a plurality of communication channels; ([0004]-[0005] disclose multiple communication channels in a data communications network)

a target device coupled to the network, the target device configured to receive tasks over the network, the target device comprising a status module configured to track system resources; ([0005] discloses devices coupled to the network, the devices inherently having a status module that tracks system resources (i.e. if a path exists or does not exist))

a server coupled to the network, the server configured to receive read/write tasks from a client device and transfer the task to the target device; ([0004]-[0006] discloses sending tasks to the target device from a server)

an upgrade module operatively coupled to the server, the upgrade module configured to upgrade the prioritization level of an unsuccessful task and communicate the unsuccessful task from to a different channel. ([0007] discloses upgrading priority of failed tasks and transmitting them to a new channel)

Regarding **claim 16 as applied to claim 15**, AAPA discloses:

further comprising a prioritization module coupled to the server and configured to define a plurality of prioritization levels. ([0006] discloses implementing a prioritization algorithm)

Regarding **claim 17 as applied to claim 15**, AAPA discloses:

wherein the task controller further comprises a counter that is updateable and configured to indicate system resource usage of the target device. ([0006] discloses a counter that is updated)

Regarding **claim 18 as applied to claim 15**, AAPA discloses:

wherein the prioritization module is configured to allocate a majority of system resources to a task with a higher priority and a minority of system resources to a task with a lower priority. ([0006] discloses such a priority scheme (70/20/10))

AAPA discloses all the limitations of claims 15-18 except for:

a task controller coupled to the server and configured to maintain system resources on a failed target channel while resubmitting the unsuccessful task to a different channel

The general concept of maintaining resources on a failed channel while resubmitting the task is well known in the art as taught by Ballew. (Note that failed tasks are still assigned to the failed processor while they are being reassigned to one that is online. (See Figs. 2 and 7)

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine AAPA with the general concept of maintaining resources on a failed channel while resubmitting the task as taught by Ballew in order to accurately keep track of what tasks are pending on a failed channel or processor.

13.   Claims 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Ballew.

Regarding **claim 19**, AAPA discloses:

A method for maintaining task prioritization and load balancing, the method comprising:

selecting a communication channel, processing a task over the selected

communication channel, and updating a counter according to utilized system

resources; ([0006] discloses the counter and the process of selecting a channel

and processing the task over the channel.)

upgrading a prioritization level of an unsuccessful task and communicating

the unsuccessful task to a different channel; and ([0007] discloses upgrading the

priority of a task that has failed and routing it to a different channel)

Regarding claim 20 as applied to claim 19, AAPA discloses:

wherein selecting a communication channel comprises distributing tasks

across the plurality of communication channels according to a load balancing

scheme. ([0006] discloses a method of balancing tasks across multiple paths)

Regarding **claim 21 as applied to claim 19**, AAPA discloses:

further comprising incrementing a counter prior to processing the task.

([0006] discloses incrementing a counter prior to processing a task)

Regarding **claim 22 as applied to claim 19**, AAPA discloses:

further comprising incrementing a second counter on a second channel

when processing a failed task on the second channel. ([0006]-[0007] disclose

that the counter on the second channel must be incremented as well.)

AAPA discloses all the limitations of claims 19-24 except for:

maintaining system resources on a failed target channel while

resubmitting an unsuccessful task to a different channel.

further comprising incrementing and decrementing counters on subsequent failed channels.

further comprising decrementing the counter after the task successfully completes on a different channel.

The general concept of maintaining resources on a failed channel while resubmitting the task is well known in the art as taught by Ballew. (Note that failed tasks are still assigned to the failed processor while they are being reassigned to one that is online. (See Figs. 2 and 7)

The general concept of incrementing and decrementing counters on further channels if necessary is well known in the art as taught by Ballew. (Fig. 2 and 7, when each processor fails, the counters are incremented and decremented, and the tasks reassigned to new processors.)

The general concept of decrementing a counter after a task successfully completes is well known in the art as taught by Ballew. (Fig. 2 and 6 disclose decrementing a counter when a task is completed.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine AAPA with the teachings of Ballew in order to make the system more fault tolerant.

14.   Claims 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA and Ballew.

Regarding **claim 25**, AAPA discloses:

A computer readable storage medium comprising computer readable code configured to carry out a process for maintaining task prioritization and load balancing, the process comprising:

selecting a communication channel, processing a task over the selected communication channel, and updating a counter according to utilized system resources; ([0006] discloses the counter and the process of selecting a channel and processing the task over the channel.)

upgrading a prioritization level of an unsuccessful task and communicating the unsuccessful task to a different channel; and ([0007] discloses upgrading the priority of a task that has failed and routing it to a different channel)

Regarding **claim 20 as applied to claim 19**, AAPA discloses:

wherein selecting a communication channel comprises distributing tasks across the plurality of communication channels according to a load balancing scheme. ([0006] discloses a method of balancing tasks across multiple paths)

Regarding **claim 27 as applied to claim 25**, AAPA discloses:

further comprising incrementing a counter prior to processing the task. ([0006] discloses incrementing a counter prior to processing a task)

AAPA discloses all the limitations of **claims 25-29** except for:

maintaining system resources on a failed target channel while resubmitting an unsuccessful task to a different channel.

further comprising incrementing and decrementing counters on subsequent failed channels.

further comprising decrementing the counter after the task successfully completes on a different channel.

The general concept of maintaining resources on a failed channel while resubmitting the task is well known in the art as taught by Ballew. (Note that failed tasks are still assigned to the failed processor while they are being reassigned to one that is online. (See Figs. 2 and 7)

The general concept of incrementing and decrementing counters on further channels if necessary is well known in the art as taught by Ballew. (Fig. 2 and 7, when each processor fails, the counters are incremented and decremented, and the tasks reassigned to new processors.)

The general concept of decrementing a counter after a task successfully completes is well known in the art as taught by Ballew. (Fig. 2 and 6 disclose decrementing a counter when a task is completed.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine AAPA with the teachings of Ballew in order to make the system more fault tolerant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael E. Keefer whose telephone number is (571) 270-1591. The examiner can normally be reached on Monday-Friday 5:30am-2:00pm,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

NATHAN FLYNN

SUPERVISORY PATENT EXAMINER

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MEK 7/6/2007